

II. Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing a microelectronic device, comprising:
forming a patterned feature over a substrate;
depositing a conformal polymer layer over the patterned feature and the substrate, wherein such depositing employs a fluorine-containing plasma source; ~~and~~
etching the polymer layer to expose the patterned feature and a portion of the substrate, thereby forming polymer spacers on opposing sides of the patterned feature; and
forming an insulating layer over the polymer spacers.
2. (Original) The method of claim 1 wherein the conformal polymer layer is deposited in a chemical reactive plasma environment.
3. (Original) The method of claim 1 wherein the substrate comprises diamond.
4. (Original) The method of claim 1 wherein the substrate comprises strained silicon.
5. (Original) The method of claim 1 wherein the patterned feature is a semiconductor device gate structure.
6. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises CF_4 .
7. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises CF_3 .
8. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises C_2F_2 .
9. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises CH_2F_2 .
10. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises CHF_3 .

11. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises C_2F_6 .
12. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises C_3F_8 .
13. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises SF_6 .
14. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises C_3F .
15. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises CH_3F .
16. (Original) The method of claim 1 wherein the fluorine-containing chemistry comprises a fluorocarbon.
17. (Original) The method of claim 1 wherein a flow rate of the fluorine-containing chemistry ranges between about 5 sccm and about 200 sccm.
18. (Original) The method of claim 1 wherein the fluorine-containing chemistry further includes a chlorine-containing gas.
19. (Original) The method of claim 18 wherein the chlorine-containing gas comprises Cl_2 and chlorocarbons.
20. (Original) The method of claim 1 wherein the fluorine-containing chemistry further includes a bromine-containing gas.
21. (Original) The method of claim 20 wherein the bromine-containing gas comprises HBr .
22. (Original) The method of claim 1 wherein the etching employs an oxygen-containing gas.
23. (Original) The method of claim 22 wherein the oxygen-containing gas comprises O_2 .
24. (Original) The method of claim 22 wherein the oxygen-containing gas comprises O_3 .

25. (Original) The method of claim 22 wherein the oxygen-containing gas comprises NO₂.
26. (Original) The method of claim 22 wherein the oxygen-containing gas comprises CO₂.
27. (Original) The method of claim 22 wherein the oxygen-containing gas comprises CO.
28. (Previously Presented) The method of claim 1 wherein the step of depositing the polymer layer employs a direct current (DC) bias applied to the substrate ranging between about 1 Watts and about 50 Watts.
29. (Previously Presented) The method of claim 1 wherein the step of depositing the polymer layer employs a radio frequency (RF) bias applied to the substrate ranging between about 1 Watts and about 50 Watts.
30. (Original) The method of claim 1 wherein the etching the spacer employs a direct current (DC) bias applied to the substrate ranging between about 1 Watts and about 500 Watts.
31. (Original) The method of claim 1 wherein the etching the spacer employs a radio frequency (RF) bias applied to the substrate ranging between about 1 Watts and about 500 Watts.
32. (Currently Amended) The method of claim 1 further comprising:
forming source/drain regions in the substrate on opposing sides of the patterned feature; ~~and~~
~~removing the spacers after forming the source/drain regions.~~
33. (Original) The method of claim 32 wherein removing the spacers includes etching the spacers with an oxygen-containing gas.

Claims 34-36 (Cancelled).

37. (New) A method of manufacturing a microelectronic device, comprising:
forming a doped well in a substrate;
forming a gate stack over the doped well;
forming, in-situ, polymer spacers on opposing sides of the gate stack by:
 employing a substrate bias and a fluorine-containing plasma source to deposit a
conformal polymer layer over the gate stack; and
 adjusting the substrate bias, without removing the substrate bias, to etch the polymer
layer with the fluorine-containing plasma, thereby exposing the gate stack and defining the
polymer spacers; and
forming an insulating layer over the polymer spacers.

38. (New) The method of claim 37 wherein forming the doped well includes:
 employing a high density plasma source to form the doped well, the high density plasma source
having a carbon-to-deuterium ratio ranging between about 0.1 percent and about 5 percent in a process
ambient, wherein the process ambient pressure ranges between about 0.1 mTorr and about 500 Torr and
the substrate is held at a temperature ranging between about 150°C and about 1100°C; and
 treating the doped well by employing a deuterium-containing plasma.

39. (New) The method of claim 37 further comprising:
 forming source/drain regions in the doped well via ion implantation before the step of forming the
insulating layer, wherein forming the source/drain regions includes employing the polymer spacers to
laterally limit formation of the source/drain regions during the ion implantation; and
 forming contact regions over the source/drain regions and contacting the polymer spacers, before
the step of forming the insulating layer.